INEEL/EXT-02-01353

Summary of Fiscal Year 2002

Water Integration Project Accomplishments

December 2002

Idaho National Engineering and Environmental Laboratory

INEEL HOME OF SCIENCE AND ENGINEERING SOLUTIONS

INEEL/EXT-02-01353

Summary of Fiscal Year 2002 Water Integration Project Accomplishments

December 2002

Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho 83415

Prepared for the U.S. Department of Energy Assistant Secretary for Office of Science
Under DOE Idaho Operations Office Contract DE-AC07-99ID13727

Project Manager's Message

The U. S. Department of Energy, Idaho Operations Office (DOE-ID) values protecting the Snake River Plain Aquifer from contaminants generated from past operations at the Idaho National Engineering and Environmental Laboratory (INEEL). In this regard, DOE-ID has recognized the need to develop an effective site-wide strategy to assess the impacts of INEEL contaminants in the vadose zone (the geologic area between the land surface and the underlying water table), the effects on contaminant transport of flooding in the INEEL spreading areas and the Big Lost River, and groundwater beneath the INEEL.

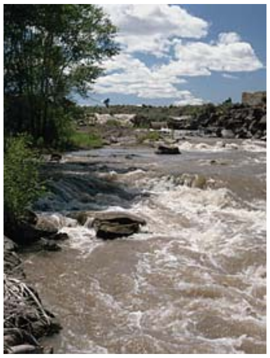
While DOE-ID has gathered a substantial amount of valuable information on groundwater contamination, more needs to be done to establish a better quantitative understanding of the vadose zone and the waste sources that have contributed to the existing subsurface and groundwater contamination. There are uncertainties and data gaps in the current understanding of the inventory, distribution, and movement of contaminants in the vadose zone. This information is needed to fully evaluate the impacts of radioactive or otherwise hazardous releases to the Snake River Plain Aquifer.

To meet these needs, DOE-ID established the Water Integration Project in January 2002 to develop an integrated site-wide plan to characterize the INEEL surface water, vadose zone, and groundwater and to coordinate all relevant site programs and plans with the primary objective of protecting the aquifer. The purpose of the Water Integration Project is to integrate all of the various water sampling, research, monitoring, and modeling efforts on the INEEL into a single, cohesive program. The ultimate goal of the program is to reduce risk to the public, workers, and the environment. To accomplish this, DOE-ID is committed to several project objectives:

- Enhance scientific understanding of surface water, groundwater, and contaminant movement at the INEEL
- Identify and fill information gaps
- Improve the technical basis for making cleanup decisions to ensure that the Snake River Plain Aquifer is protected for the long term
- Engage the public and stakeholders in meaningful dialogue throughout the life of the project
- Emphasize clarity, consistency, and accessibility in information management
- Strengthen and better coordinate groundwater and vadose zone monitoring programs
- Establish an expert peer review panel to review the project's technical products.

Over the last year we have made significant achievements toward meeting these project objectives. I want to express the Department of Energy's appreciation to those INEEL employees and involved stakeholders who have contributed to the early success of the Water Integration Project. This report is not about the accomplishments of a few, but of what we can accomplish when we actively work together toward common objectives. We established high expectations for performance less than a year ago and those involved have lived up to those expectations. I am pleased to present this report that describes the project's end-state objectives and accomplishments to date.

Project Manager



Cover photo of Big Lost River taken on INEEL site during high run-off in 1984

Contents

Summary of Fiscal Year 2002

Mission Assigned

In October 2001, the U. S. Department of Energy formed the INEEL Water Integration Project to establish a basis for integrating and coordinating present and future activities that characterize, monitor, and remediate the Eastern Idaho Snake River Plain's groundwater and vadose zone. Numerous cleanup and monitoring activities at the INEEL are focused on ensuring that contamination levels do not exceed established standards for groundwater. The Department, recognizing a need to better integrate and coordinate cleanup, monitoring, and research, established the Water Integration Project to:

- Enhance scientific understanding of surface water, groundwater, and contaminant movement at the INEEL
- Improve the technical basis for making cleanup decisions
- Strengthen and better coordinate groundwater and vadose zone monitoring programs.

Objectives Set

To accomplish its assigned mission the project established the following end-state objectives:

- Demonstrate the value of collaborative stakeholder participation in improving the quality of strategic decisions related to INEEL water and vadose zone projects
- Produce a single, comprehensive conceptual model that can be used to predict how water and contaminants move through the INEEL subsurface
- Establish science strategies that align subsurface research and development with operational needs and produce research data supporting credible, sustainable risk-based decisions to ensure that long-term stewardship of contaminated sites at the INEEL is achieved
- Establish an internet-based system encompassing available subsurface data and information that users can access with their desktop computers, comprehensively search, and download to meet their needs

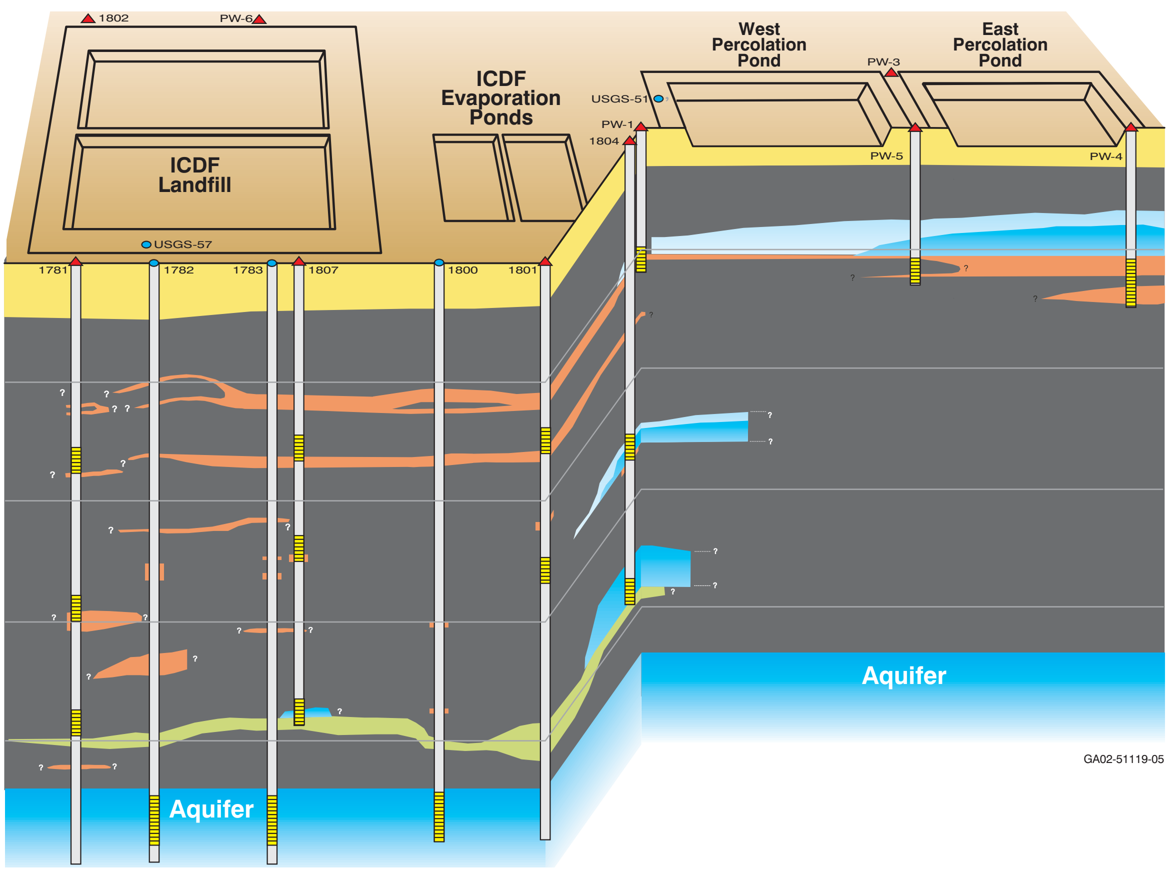
Water Integration Project
End State: A peer-reviewed INEEL subsurface research strategy developed through the cooperative efforts of INEEL operations, researchers, regulators, and public interests that resolves cleanup needs and reduces uncertainty in risk prediction.

- Develop a tool to calculate facility-wide cumulative risk and the contribution of individual sources to that risk for use in determining appropriate remedial actions
- Identify actions necessary to maximize the usefulness of INEEL groundwater monitoring data for research, as well as environmental compliance needs.

Year One Accomplishments

The project completed all of its planned first-year activities aimed at achieving the objectives:

- Established and strengthened the project's stakeholder relationships, published the public involvement plan and involved stakeholders in key project decisions
- Compiled, analyzed, and compared conceptual models of the INEEL subsurface region, and identified the similarities, differences, and gaps in knowledge among them
- Identified and prioritized uncertainties in understanding vadose zone and groundwater characteristics at the INEEL, and matched the uncertainties with INEEL science and technology needs
- Prepared a plan and proposed budget to develop a comprehensive risk assessment model to give decision-makers information about cumulative risk impacts of all remediation efforts at a facility
- Identified needs for additional coordination of groundwater monitoring and future well drilling activities.



Model of subsurface under percolation ponds at the Idaho Nuclear Engineering and Technology Center and the INEEL CERCLA Disposal Facility (ICDF)

Involving Stakeholders from the Beginning

The Water Integration Project has the potential to affect many groups and individuals: livestock and crop producers, industries, community residents, state and local government officials, and Shoshone-Bannock tribal members and governments. Others affected include state and federal regulators, public interest groups, the Department of Energy and its sister federal agencies, INEEL research, operations and facility management personnel.

To address this, the project actively incorporates stakeholder participation on the premise that input from stakeholders will improve project results. This premise applies to internal as well as external stakeholders. Stakeholder influence in the process will be evident as decisions reached over the life of the project are made and implemented.

The *Stakeholder Involvement Plan* for the INEEL Water Integration Project was developed following a two-day planning retreat held in Twin Falls, ID during February 2002. Fourteen individuals contributed to the development process, resulting in a 20-page report distributed in draft form in March 2002. The group represented a cross-section of Idaho interests from around the state with a wide range of experience on INEEL issues. Internal and external comments were incorporated into the document in June, and a final plan was published in July 2002. The 46-page final plan (now available on the project website - http://www.inel.gov/environment/water/) lays out the public participation objectives and multiple public involvement activities to be accomplished over the life of the project

Outreach Activities

Activities aimed at enhancing stakeholder understanding of water-related needs and issues, and expanding and strengthening the relationships with stakeholders are detailed below.

Weekly open management meetings—anyone from the public or an interested agency who wishes to attend the Wednesday afternoon meeting may attend in person or call in to a toll-free number. The agenda, handouts, and minutes for these meetings are posted on the project web site.

Over the year, project staff briefed 257 people in 18 sessions across southern Idaho and western Wyoming. Audiences included a wide range of stakeholders—Tribes, agriculture, industry, nonprofits, and local, state and federal government—who learned about the project's objectives and the avenues open for their participation.

In February 2002, the Water Integration Project launched its web site at http://www.inel.gov/environment/water/, which received 172 visitors during the first month. By September, visits had increased to more than 900 per month on average. The web site includes general information on the project, meeting notices and minutes, links to information on the aquifer, and a mechanism to provide comments or ask questions.

A fact sheet was published in April 2002 to introduce the Water Integration Project to a broad audience. It has been widely distributed to those attending briefings and other outreach activities, and it appears on the project's web site.

In June, the State of Idaho's INEEL Oversight organization hosted a workshop for state agency personnel in Boise to provide a comprehensive overview of the Water Integration Project and current INEEL environmental monitoring programs.

During September 2002 the project conducted three hydrogeology tours at the INEEL, with a total of 67 participants. The tours were designed to enhance understanding of the landscape and subsurface features on the Eastern Snake River Plain and the contaminant challenges facing INEEL. Co-sponsoring the tours were the Idaho Council on Industry and the Environment, and the Wood River, Mid-Snake, High Country, and Three Rivers Resource Conservation and Development Councils. Additional tours have been requested and are planned for Spring 2003.

A written tour guide booklet was designed to enhance the experience of those attending the tours offered in September. The guide is intended to expand understanding of new terminology and scientific concepts for the interested lay person.

Photo taken during one of the Hydrogeology tours in September 2002

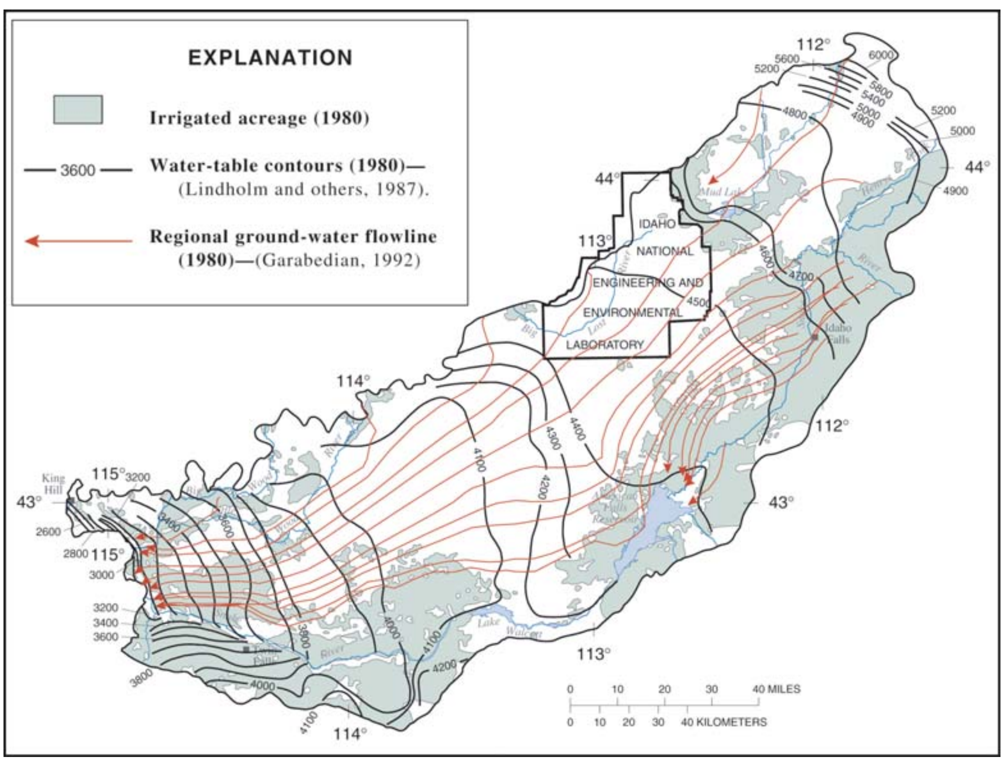
Involving Stakeholders

Two value engineering sessions were held in Idaho Falls one in April and one in September to (1) identify, define and prioritize technical uncertainties in our understanding of contaminant movement through vadose zone and groundwater systems, and (2) match research and technology development to the high priority problems faced by operations personnel at the INEEL. Value engineering is an organized procedural decision-making process that helps people creatively generate alternatives based on values. Information on identified values and the results of the value engineering sessions are available on the project web site.

The sessions included a wide range of stakeholders, including some of the INEEL's toughest critics. The results of these sessions provide the basis for the project's objective to establish the strategies that will guide future subsurface science research and technology development.

Reaching Consensus on a Comprehensive Conceptual Model of the INEEL Subregion

Numerous subregional and facility-specific conceptual models have been developed as part of INEEL cleanup activities, including many developed to address regulatory issues at specific facilities. Publication of the draft ***INEEL Subregional Conceptual Model Report: Volume 1 — Summary of Existing Knowledge of Natural and Anthropogenic Influences Governing Subsurface Contaminant Transport in the INEEL Subregion of the Eastern Snake River Plain*** in August 2002 was the Water Integration Project's first step toward achieving its objective to produce a single, comprehensive, conceptual model that can be used to predict how water and contaminants move through the INEEL subsurface. The report, which compiles the subregional and facility-specific models, outlines areas where the models differ and where they are the same, and identifies data gaps in all the models. The ultimate goal of a subregional INEEL-scale conceptual model is to understand the INEEL subsurface well enough to predict the potential movement of the contaminants beneath the INEEL.

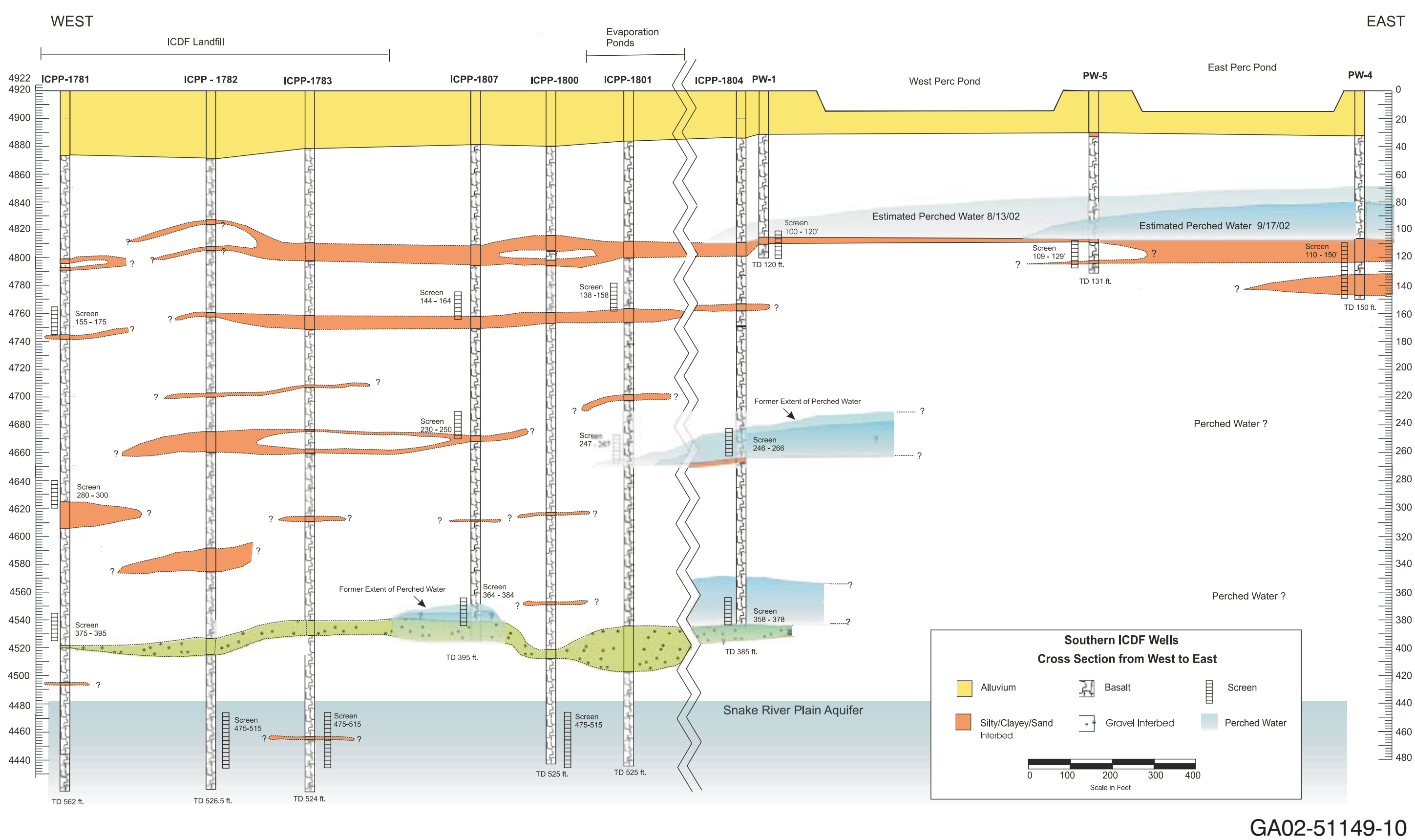


Snake River Plain Aquifer groundwater flow patterns.

Conceptual models describe the important features, processes, and events comprising a natural system in the context of a recognized problem. A conceptual model is defined as "an evolving hypothesis identifying the important features, processes, and events controlling fluid flow and contaminant transport of consequence at a specific field site in the context of a recognized problem." These models evolve as scientists devise better ways to quantify and experimentally test their understanding of the system. Models used for planning and to support regulatory decisions [e.g., development of records of decision] utilize conservative bounding assumptions when site-specific information is not available or incomplete. Using conservative assumptions accounts for missing or incomplete information by ensuring the models err on the safe side. New technologies and information can be incorporated into ongoing remedial actions during periodic reviews to improve outcome, schedule, or cost.

Sub-Regional Models

The two most comprehensive models (U. S. Geological Survey [USGS] and the site-wide model known as the Waste Area Group 10 [WAG 10] model) encompass about 2,000 square miles of the Eastern Snake River Plain. Both models are bounded to the northwest by the Pioneer, Lost River, and Lemhi mountain ranges. The edge of the groundwater flowpath bounds the models to the southeast, and both extend about 25 miles southwest of the INEEL. The WAG 10 model includes more of the Mud Lake area to utilize previous estimates of underflow into the subregion. While these two models are similar on many levels, in order to support numerical analyses and predict flow and contaminant transport, a single INEEL subregional conceptual model describing the field of flow through the subregion is needed.

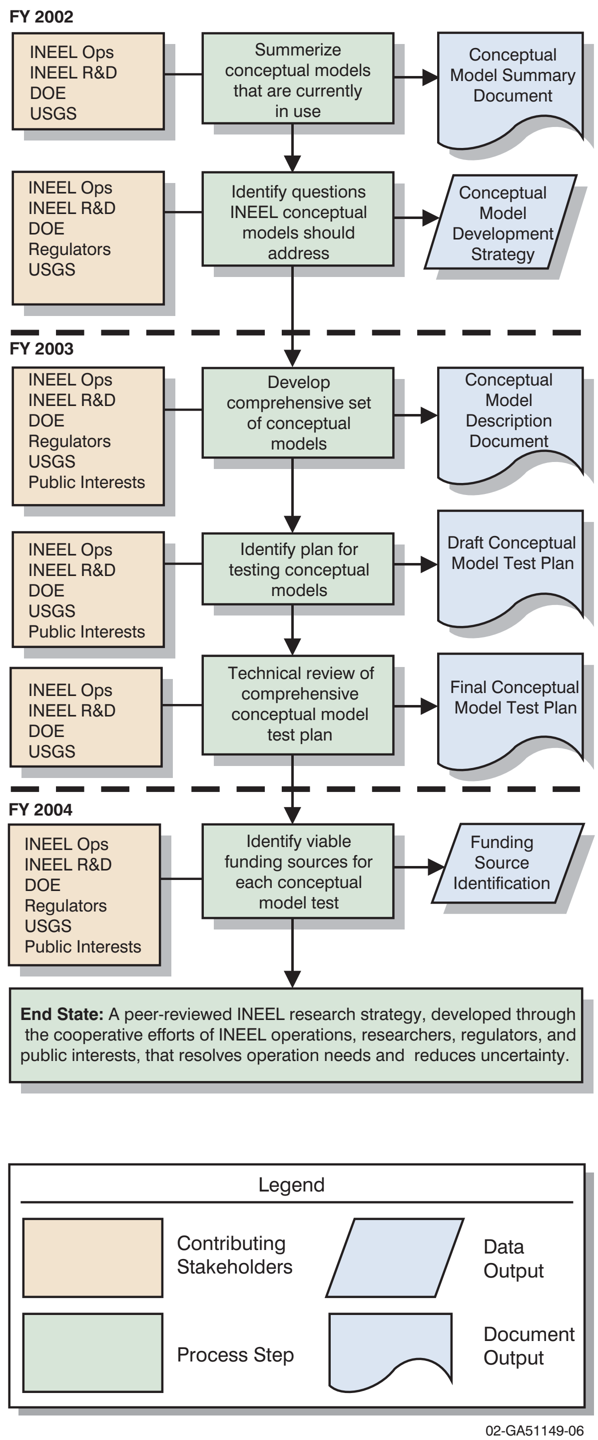


Conceptual model of subsurface at south end of Idaho Nuclear Engineering and Technology Center and the INEEL CERCLA Disposal Facility (ICDF)

Where the Models are the Same

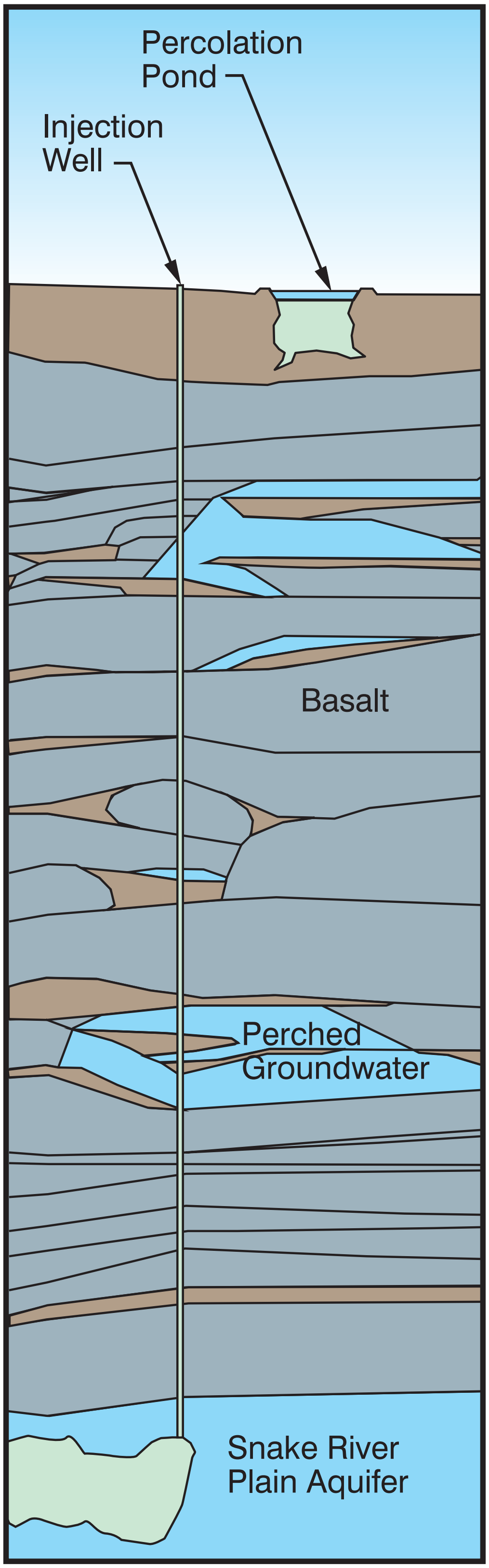
The models agree that the INEEL subregion is generally composed of a thick, complex stack of basalt flows. The models describe the stack in terms of three major units. Thin, highly fractured basalt layers comprise the upper unit. Resting among many of the basalt flows are thin layers of sedimentary (soil-like) material, which was deposited by wind and water during the periods of time between flows. Beneath this unit is a broad, thick, unfractured basalt flow that rises above the water table southwest of the INEEL. The bottom unit consists of a thick section of slightly- to moderately-altered basalt.

Across the INEEL subregion, the depth to the top of the water table varies from about 200 feet at the INEEL northern border to about 1,000 feet at the southern border. Water flows 5 to 10 feet per day in the aquifer on average—relatively fast compared to most aquifers. Within the subregion, however—and over the whole Snake River Plain Aquifer—the flow rates vary dramatically. The complex, layered system of overlapping basalt flows and sedimentary material, and the presence of volcanic vent corridors significantly affect the ability of the rock and soil to conduct and store water. Understanding the complex relationships between the geological structure and movement of the water presents subsurface scientists with some of their greatest challenges.



Conceptual model development flow chart.

The models generally agree that the subregional aquifer is mostly fed, or recharged, by several sources of "underflow," primarily from melting snow in the mountains surrounding the Big Lost River, Little Lost River, and Birch Creek Basins. A lesser source of recharge is rain or snow that falls over the subregion, and infiltrates downward to the water table.



Historic sources of contamination at the INEEL included injection wells, which are no longer used at the INEEL.

Where the Models are Different

The models differ regarding the effective thickness of the aquifer within the INEEL subregion. The USGS model has defined the effective thickness to be as much as 2,500 feet in the eastern part of the subregion and as much as 4,000 feet in the southwestern part. The WAG 10 model has developed two alternatives, a "thick" aquifer and a "thin" aquifer interpretation. The "thick" aquifer interpretation poses a range in thickness from over 1,300 feet to a maximum of 1,700 feet. The "thin" aquifer scenario minimizes aquifer thickness, ranging from 328 to 1,300 feet. Facility-specific models generally have focused on the upper 250 feet of saturation and, therefore, offer no interpretation of total aquifer thickness.

Where the Gaps are in the Models

Contaminants have been released to the subsurface through injection wells, infiltration ponds, spills, and as waste materials buried at disposal sites. INEEL scientists have a well-developed understanding of the contaminants' chemical nature and where the contaminant plumes presently reside. Little site-specific data regarding contaminant chemical forms and mechanisms of release have been incorporated into INEEL conceptual models, however.

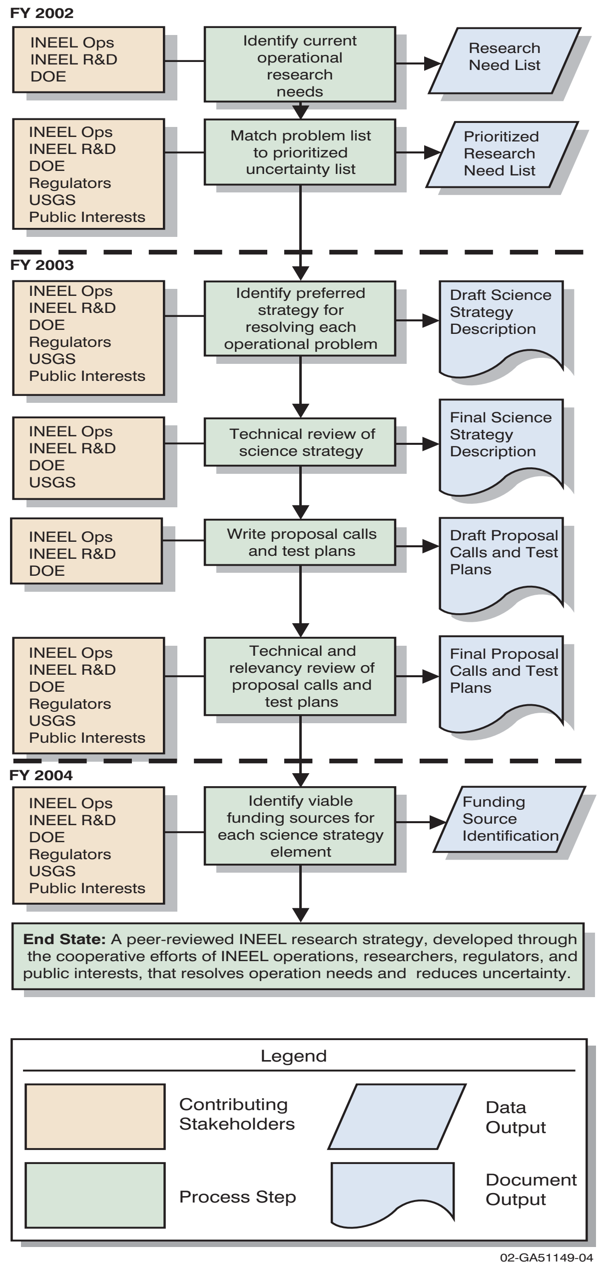
A variety of chemical and physical interactions between the contaminants and subsurface materials may enhance or impede the migration of contaminants over time. Studies of these interactions have been relatively few, and the models have not yet incorporated the site-specific data that presently exist, as well as data from similar terrains.

Shaping the Strategy for Future Subsurface Science Research

The Water Integration Project pub lished ***Development of the FY-02 Supplement of the INEEL Vadose Zone/Groundwater Roadmap*** (available on the project web site) to identify the uncertainties in knowledge about the vadose zone and groundwater at the INEEL and tie those uncertainties to future cleanup milestones. This was the first step toward ensuring that ongoing and planned scientific research will meet INEEL operational needs in the coming years and support better cleanup and long-term stewardship decisions regarding contaminated sites at the INEEL.

The roadmapping process involved identifying, describing, and prioritizing the key uncertainties in our understanding of the INEEL region's subsurface characteristics. These activities focus subsurface research and technology development on producing the data and information most needed by INEEL operations to reduce and manage the risk from past activities, and guide efforts to accomplish new INEEL missions. In April 2002, project staff conducted a value engineering session, involving 25 scientists and project stakeholders, and produced a prioritized list of 25 uncertainties.

Project staff also interviewed INEEL operations personnel to identify their most pressing science and technology needs. Most of the participants from the April value engi-



Science strategy development flow chart.

neering session returned in September to review and prioritize the science and technology needs. Project staff then began the process of matching high priority uncertainties to high priority needs.

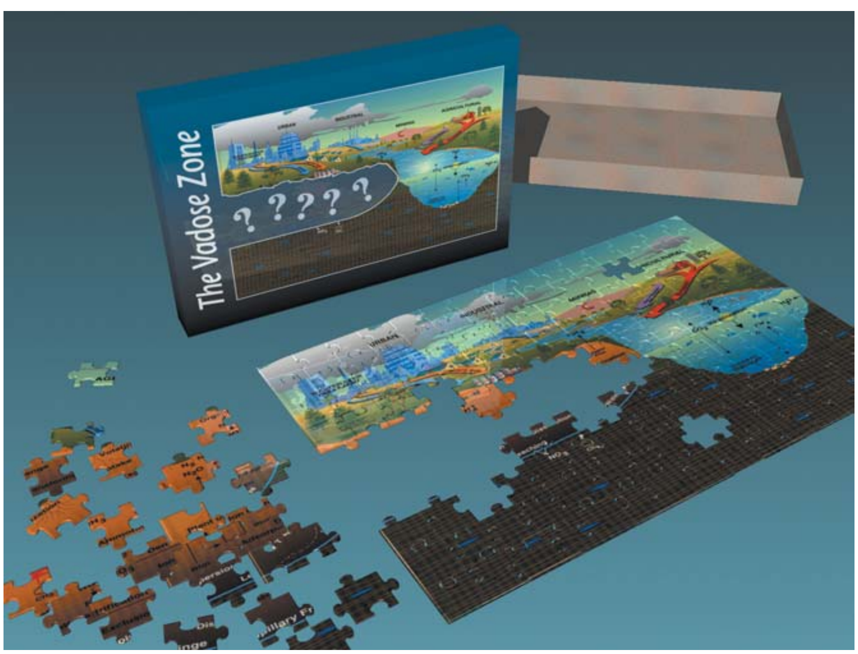
Top Ten Uncertainties Summarized

An Uncertainties Prioritization Value Engineering Session was held in Idaho Falls, Idaho in April, 2002 to prioritize the vadose zone and groundwater uncertainties. The uncertainties were developed over a two-year period by scientists and engineers knowledgeable in the areas of geosciences, flow and transport modeling, source term issues, and surface and groundwater issues. These uncertainties represent gaps in knowledge and capabilities related to the vadose zone and groundwater at the INEEL. The results of this ranking will be used to develop science strategies to integrate research and technology development and long-term monitoring projects at the INEEL and more effectively achieve programmatic goals.

Priorities for science and technology research to support the science will be determined on the potential to quantify and reduce the uncertainty in risk predictions.

The highest priority uncertainties identified during the value engineering sessions are:

1. Mechanisms and parameters describing adsorption of contaminants onto INEEL materials have not been adequately developed or measured
2. Knowledge of stratigraphic and structural controls on flow patterns in the vadose zone and the aquifer is limited
3. Available field data are of insufficient quality and quantity for use in predictive simulation
4. Conceptual models are often inadequate for prediction because they do not incorporate necessary physical and biogeochemical processes
5. Chemistry of the near-field environment (e.g. the oxidation-reduction potential and solubility effects) may significantly affect the release and the rate of migration
6. Knowledge of flow direction and temporal behavior in the aquifer is limited
7. Conditions leading to facilitated transport are unknown
8. Preferred pathways are not detected or monitored, and there is relatively little information available
9. There are uncertainties associated with incomplete contaminant inventories
10. Various sources of uncertainty and their relative impact on the predictability of transport is unknown and currently unqualified.



Improving Coordination and Access to Subsurface Information

Access to Information

Over the extended history of the INEEL, different groups have generated a massive amount of data related to the Snake River Plain's subsurface characteristics. The INEEL Hydrogeologic Data Repository houses geologic and hydrologic information on the region, the Eastern Snake River Plain, and the Snake River Plain Aquifer.

The INEEL Hydrogeologic Data Repository has been a valuable resource for subsurface data and information. Funding constraints in the past, however, have not allowed the repository to adopt recent technological advances in information storage and access. As a result, users have spent inordinate amounts of time to access and search subsurface data.

The Water Integration Project supported conversion of about 70% of the repository's more than 2,700 holdings to electronic formats by INEEL Hydrodeologic Data Repositiry staff. Staff also them for full-text search and users can now access the information from their own computers using a CD-ROM viewer. Software has been acquired to allow user access via the INEEL Intranet.

Subsurface Monitoring

In 2002, the INEEL prime contractor issued a groundwater monitoring plan. The Water Integration Project evaluated this plan and identified a need for additional coordination of subsurface monitoring and drilling activities. The existing monitoring plan does not include future well drilling activities at the INEEL. The Water Integration Project's recommendation is that a single entity be responsible for coordinating well drilling and serve as a source of integrated information for projects that plan to drill wells in the future and identifies the need for a single comprehensive annual report that includes monitoring and well drilling activities for the previous year.

Assessing Cumulative Risk

The Water Integration Project outlined the scope of work and resources needed to produce a cumulative risk assessment tool that would allow decision-makers to evaluate the effects of environmental remediation on all risks at the INEEL, and prioritize the use of cleanup funds to achieve the greatest risk reduction benefit.   Funding for development a cumulative risk assessment tool is being sought.

Year One Wrap-Up and Next Steps

The INEEL Water Integration Project achieved what has been reported here with fiscal year 2002 funding of $878 thousand.

All project activities in fiscal year 2003 are funded by INEEL Environmental Management Operations. The current funding available to the project for fiscal year 2003 is $1.3 million.

The project's tasks for fiscal year 2003 are shown in the table below. These tasks include stakeholder involvement, subsurface conceptual model development, and science strategy development. Other tasks that will be performed if additional funding becomes available include: cumulative risk tool development, development of an INEEL electronic subsurface information library, and impaneling an expert review panel.

The Project's Future

Activities	Fiscal Year 2003 Plans	End-state Objectives
Stakeholder Involvement	Public input to conceptual model and science strategies will be obtained	Stakeholders' recommendations inform and improve the decision process
Subsurface Conceptual Model	Scientific peers and stakeholders will validate the model. Development will continue with focus on contaminant release mechanisms and transport	Scientists and stakeholders reach consensus on a single concept model of the INEEL sub-region, and a process in place for scientific peer and stakeholder review as it evolves
Subsurface Research Development	Science strategies will be written and validated by scientific peers and stakeholders. Test plans will be prepared and validated for high priority uncertainties	Subsurface research and technology development is aligned with INEEL Operations' needs
Access to Subsurface Data	———	Subsurface data and information is fully accessible via an internet-based system
Comprehensive Risk Assessment Tool	———	INEEL managers have a tool for assessing the impacts of environmental remediation site-wide and prioritizing future cleanup activities

02-GA51149-02

Bibliography

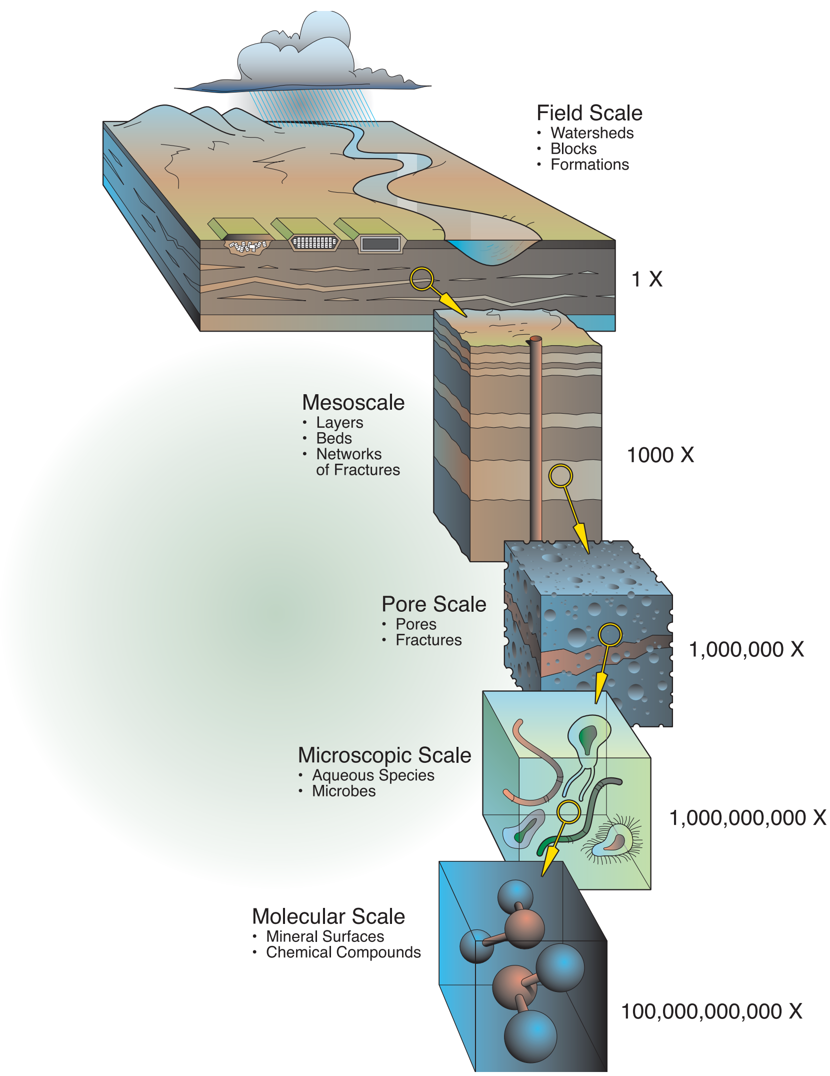
Stakeholder Involvement Plan - INEEL Water Integration Project, DOE/ID-10986, July 2002.

INEEL National Engineering and Environmental Laboratory Groundwater Monitorinng Plan, DOE/ID-10441, September 2002.

Raw Data Report and Meeting Record from the Vadose Zone/Groundwater Uncertainties Prioritization Meeting, April 2 and 3, 2002, INEEL/EXT-02-00529, April 2002.

INEEL Subregional Conceptual Model Report Volume 1 - Summary of Existing Knowledge of Natural and Anthropogenic Influences Governing Subsurface Contaminant Transport in the INEEL Subregion of the Eastern Snake River Plain (Draft), INEEL/EXT-02-00987 Revision A, August 2002.

Development of the FY-02 Supplement of the INEEL Site-Wide Vadose Zone/Groundwater Roadmap, INEEL/EXT-02-01038, September 2002.



The Vadose Zone Research Park allows geologists and hydrologists to test hypotheses developed at progressively larger scales.

Acknowledgments

INEEL External Stakeholders

Ackerman, Dan	U.S. Geological Survey
Andreasen, Dick	Mayor, City of Shoshone
Ball, Richard	Jefferson Soil and Water Conservation District
Bandy, Phil	Idaho Department of Environmental Quality
Barclay, Pat	Idaho Council for Industry and the Environment
Beckley, Bonnie	Secretary, Mid-Snake RC&D and Wood River RC&D
Bigger, Sarah	Office of Senator Mike Crapo
Blanchard, Tom	Wood River RC&D
Bolte, Bob	Gooding Soil Conservation District and Wood River RC&D
Bowles, Boyd	Teton County, Wyoming Representative
Brailsford, Beatrice	Snake River Alliance
Burgess, Ken	Office of Senator Larry Craig
Cornelison, Lyle	Wood River RC&D
Danner, Don	Mayor, City of Albion
Davis, Rick	Hailey City Councilman
Dixon, Georgia	Office of Senator Larry Craig
Frederick, Dave	INEEL Oversight Program
Fredericksen, William	Clark County Commissioner
Fuhrman, Jaime	INEEL Oversight Program
Gooding, Dean	Wood River RC&D
Herring, Joe	Region IV Economic Development
Huggins, Polly	Coordinator, Wood River RC&D
Hurd, Kathy	North Side Soil Conservation District

Jaquet, Wendy	State Representative and Wood River RC&D
Jeffers, Mark	Idaho Department of Environmental Quality
Jeppesen, Gerald	Chair, High Country RC&D and Madison County Commissioner
Jesser, Roy	Chairman, Mid-Snake RC&D
Johnston, Jim	Idaho Department of Environmental Quality
Jones, Paula	Coordinator, Three Rivers RC&D
Keller, Jeremy	Sawtooth National Forest
Kinder, Cindy	U of I County Extension Service, and Camas Civic Organizations
Kipping, David	INEEL Citizens Advisory Board and Snake River Alliance
Knobel, LeRoy	U.S. Geologic Survey
Kohtz, Del	Water Right Trader
Koonce, Hugh	Wood River RC&D
Lowe, Wendy Green	Jason Associates Corporation
Lundgren, Rob	Jerome City Council
Mathews, Mike	Office of Senator Larry Craig
McGarry, Pete	Mud Lake Soil and Water Conservation District
Milam, Linda	Mayor, City of Idaho Falls
Nimmo, John	U.S. Geologic Survey, Menlo Park
Norris, Linda	Office of Senator Mike Crapo
Nygard, Dean	Idaho Department of Environmental Quality
Parker, Rusty	Commissioner Lincoln County
Parkinson, Neil	Butte County Representative
Pence, Lew	Mid-Snake Regional Water Commission
Pierre, Wayne	Environmental Protection Agency
Proksch, Joe	Lemhi County Representative
Rattray, Gordon	U.S. Geological Survey
Risley, David	Idaho Department of Environmental Quality
Rodman, Bob	Chairman, Wood River RC&D and Camas Soil Conservation District
Rothweiler, Travis	Vice Chair, Mid-Snake RC&D/Jerome City Administrator
Rousseau, Joe	U.S. Geological Survey
Rudeen, Kent	Power County Representative and Chairperson, Three Rivers RC&D
Rydalch, Dave	INEEL Citizen Advisory Board
Scott, Jim	Rural Magic Valley Economic Development Association

Simmons, Larry	Jefferson Co. Commissioner
Smart, Steve	Coordinator, High Country RC&D
Smith, Robert W.	University of Idaho
Suhr, Dan	Mid-Snake Water Commissioner
Tanner, John	Coalition 21
Tewalt, Josh	Office of Congressman Butch Otter
Thomas, Julie	Coordinator, Mid-Snake RC&D
Twining, Brian	U.S. Geological Survey
Williams, Randy	Executive Director, Teton (Wyo.) Soil Conservation District
Winter, Gerry	Idaho Department of Environmental Quality
Wright, Dennis	Blaine County Commissioner
Yupe, Diana	Shoshone-Bannock Cultural Resource Coordinator

INEEL Participants

Allgood, Lane	INEEL Communications
Arnett, Ron	INEEL Research and Development
Brown, Jan	INEEL WIP Stakeholder Involvement Lead
Bugger, Brad	INEEL DOE-ID Communications
Burns, Doug	INEEL WIP Project Manager
Eide, Steve	INEEL Research and Development
Francis, Stacey	INEEL Communications
Gibson, Patty	INEEL Research and Development
Hall Collins, Rachel	U.S. Department of Energy
Hull, Larry	INEEL Research and Development
Jines, Alan	U.S. Department of Energy
Jonker, Betsy	U.S. Department of Energy
Kauffman, Richard	U.S. Department of Energy
Kowall, Steve	INEEL Research and Development
Little, Marianne	INEEL WIP Project Controls Lead
Magnuson, Swen	INEEL Research and Development
Mattson, Earl	INEEL Research and Development

McCarthy, James	INEEL Research and Development
McLing, Travis	INEEL Research and Development
Natoni, Patty	U.S. Department of Energy
Nuckols, E.B.	U.S. Department of Energy
Orr, Brennon	North Wind Environmental
Perry, Jeff	U.S. Department of Energy
Powell, Amy	Argonne National Laboratory - West
Riepl, Lou	INEEL Community and Education Liaison
Shaw, Mark	U.S. Department of Energy
Smith, Dick	INEEL Research and Development
Street, Leah	INEEL Environmental Monitoring
Weingartner, Brooks	U.S. Department of Energy
Wichlacz, Paul	INEEL WIP R&D Interface Lead
Wright, Mike	INEEL Research and Development
Yonk, Al	INEEL WIP Project Engineer

GA02-51149